HindSight

The stories behind what's in front of you.

Proposal for Michael Olyjnik & Barbara Luderowski

Grad Design Studio I, Fall 2007
Professor Dan Boyarski
Carnegie Mellon University

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Dear Barbara and Michael,

Thank you for welcoming us into your beautiful space, and for allowing us to explore and experience your personal collection of delightful possessions. It inspired us to create a concept that captures the essence of the experience and preserves your multifaceted stories for future generations to enjoy as much as we have.

Sincerely,

Melissa Cliver
melissacliver@gmail.com

Christina Payne
capayne@andrew.cmu.edu

Wiebke Poerschke
wpoerschke@gmail.com

Kyle Vice
kylevice@cmu.edu

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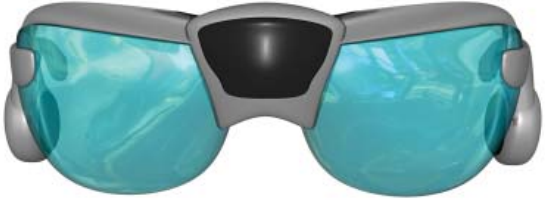


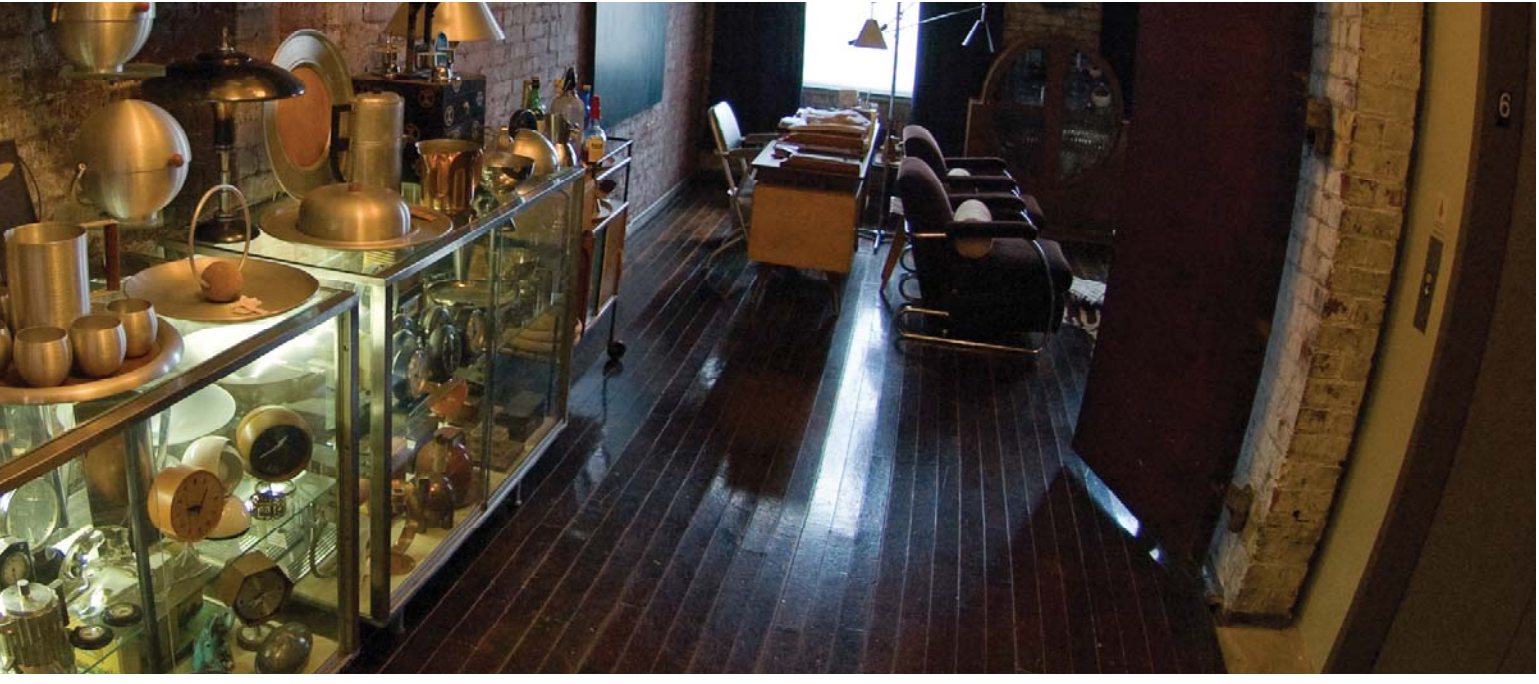
HindSight

Abstract

This book describes the design of a concept for experiencing the sixth floor of the Mattress Factory in the future, without Barbara and Michael's presence.

This concept requires the space to stay as it is and for the sixth floor to be added as a permanent exhibition. Our intention is to preserve the experience by allowing visitors to navigate the space in any order and presenting them with Barbara and Michael's stories. These stories bring the collection together, and their stories of pursuit are the core behind what has been acquired.

Wearing wirelessly connected glasses and headphones, a visitor can see and hear stories about the artifacts in front of them. We outline a proposal of this experience and the technologies that are capable of bringing this concept to fruition.



Statement

On November 14, 2007, the Design Graduate Studio I class from Carnegie Mellon University visited the sixth floor of the Mattress Factory, home to Barbara Luderowski and Michael Olyjnik. Professor Dan Boyarski had divided the class into four teams of four to work on a group project; the assignment was to design a concept to help the couple structure their personal collection with a macro and micro point of view.

Equipped with a digital video camera, camera and notepads, our team entered the space and were immediately captivated. The 3,500 square foot loft holds shelves and cabinets that reach the ceiling and are filled with collectible items. It was clear that the collectors found an appreciation of aesthetic and form.

The collection was displayed in an undetermined organization and remained abstract until Barbara and Michael offered their stories and brought the collection to life. Melissa followed Barbara with a video camera as she showcased some of her favorite items; Kyle captured photos and Christina and Wiebke fastidiously took notes. document the stories told about the background and acquisition of certain pieces. During an interview session with Michael and Barbara, the teams asked about the breadth of the collection, and what, how and why they collect.

What:

Michael's collection is heavily based on 1930-60's design pieces. Barbara collects toys, art, furniture, dishes, appliances, holiday collections, 1939's world's fair pieces, mechanical pieces, dolls with teeth; however no plastic. They see the aesthetic beauty of the pieces, not the value or history first. None of the pieces are inventoried or appraised. Most of the collection is acquired in Pittsburgh at flea markets, however some pieces have been found in Eastern Europe, India, China, Thailand and Paris.

How:

They are always on the look out and acquire weekly. They are rarely seeking something specific and enjoy going to flea markets, not knowing what they will discover. They occasionally search on e-bay but are cautious of authenticity when doing so.

Why:

They live for the pursuit and the psychological drive to collect; the experience of seeing something for the first time and "always liking the next thing best." On several occasions, Michael and Barbara referred to the book *Collecting: An Unruly Passion* as a resource to understand this.

"Objects in the collector's experience, real or imagined, allow for a magical escape into a remote and private world."

Werner Muensterberger, from *Collecting: An Unruly Passion*

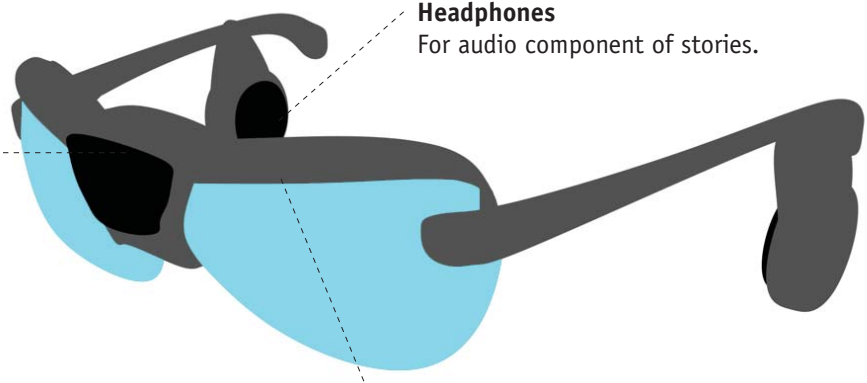
Design

We unanimously agreed that visiting the sixth floor was a unique experience. While the focus was originally to design a system to organize the collection, we did not think that Barbara and Michael would fully benefit with an inventory database. It is not the data of the objects that need to be recorded, so much as the stories behind the objects. Michael and Barbara's passion about collecting as told through the objects is what should be captured and stored.

We recommend that the space be preserved and eventually added as a permanent exhibition in the Mattress Factory. The exhibit would present the personal insights of Barbara and Michael, the masterminds behind the organization. This would be the ultimate experience of their own vision: "art you can get into".

Our concept, called HindSight, will collect Barbara and Michael's stories for each object and tag them to be identified and played when a viewer gazes upon the respective object. The concept focuses on "augmented reality", or a field of computer research that combines real-life material with computer-enhanced data. We have researched similar examples, mostly found in technology used for military purposes and in some advanced museum exhibits.

In this instance, the real-life material would be the collection as it is displayed in the space. The technology of HindSight would recognize what the visitor is viewing and enhance the experience by projecting a virtual image of Barbara and Michael interacting with the viewed object. The visitor would control the experience by choosing which stories to view, and when.



Headphones
For audio component of stories.

Infrared Transmitter
Embedded in the Hindsight glasses. These transmit the viewers direction to the infrared detectors.

Gyroscopes & Accelerometers
Embedded in Hindsight glasses. These determine the tilt of the viewers head to calculate viewable field.

VRD Projector
Projects the video onto the viewer's eyes.

Technology

Eyewear Display

The glasses will be lightweight and have clear lenses, so that the viewer can see the real-life material without any obstruction. A small electronic source within the glasses will create an image that is virtual and superimposed over the real-life environment.

The technology is called Virtual Retinal Display (VRD), and was invented by the University of Washington Human Interface Technology Lab. With VRD, a beam of light from the electronic source is projected onto the viewer's retina and creates a rasterized image.

Embedded inside the glasses are infrared transmitters. The transmitters will signal information to infrared detectors that are placed throughout the space. The signals will recognize where the viewer is looking and what objects are within the periphery.

Along with the transmitters, gyroscopes and accelerometers will pinpoint the movement of the viewer's head and calculate the viewable field.

Once the glasses' transmitters recognize that the viewer has been gazing in the same direction for six seconds, it will prompt information about the objects within view to be displayed through VRD. The viewer can control the information with a handheld device.

The glasses will also have a radio frequency identification (RFID) tag embedded to track where the viewers are located throughout the sixth floor.


Barbara
Michael
Artist
Stories off

System

Handheld Remote Device

The remote will be approximately 4.5" x 2.5". x 0.5" and have three controls: on/off, volume, and a toggle bar. The toggle will control the interface of the glasses and let the viewer choose which story to listen to after it has been prompted by the VRD. Depending on the available data for the object being viewed, the user can choose to play Michael's story, Barbara's story and another story source, or turn off the story. The device will transmit information to the glasses and audio headset with infrared transmitters, similar to any remote control.

Central Server

A central server will house all of the video and will perform the tracking of each visitor and each object in the space. Video is transmitted to the glasses from the central server via Bluetooth wireless technology. In addition, the remote utilizes Bluetooth to remain connected to a single pair of glasses.

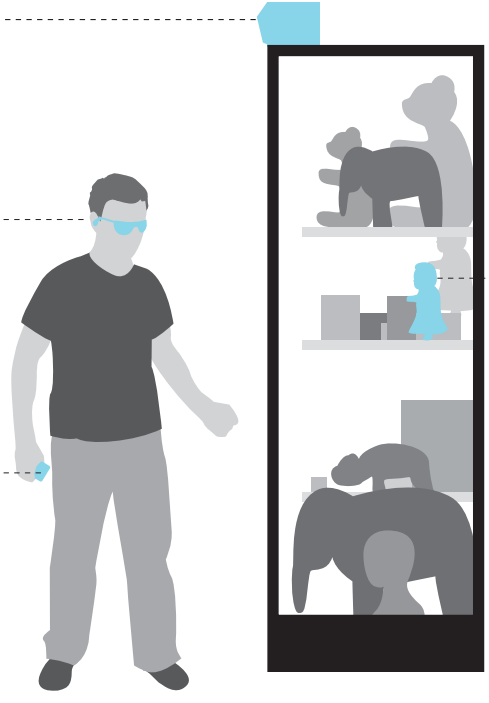
Data Components

For HindSight to recognize which story to tell, data for the objects must be collected. Michael and Barbara will be recorded on digital video camera telling a story about a particular item. That item will receive its own RFID tag. The information will then be compiled into a database. Infrared detectors will be placed throughout the space on top of display cases and by wall mounts. The detectors will transmit the stored data connected to the object's RFID tags after the six second gaze.

Infrared Detectors
Placed atop the displays and along the top of the walls. They track the direction of each visitor's gaze.

HindSight Glasses
Worn by each visitor. Provides view tracking and audio and video experience for the wearer.

HindSight Remote
Paired with the HindSight glasses. The remote allows the visitor to switch between stories and provides volume control and a power switch.



RFID Tags
Attached to artifacts and embedded in HindSight glasses. Transmits the location of each object and each pair of glasses.

Methodology

Once developed, HindSight will require the cooperation of Michael and Barbara to interact with an object and tell their story while being recorded digitally. A researcher dedicated to the installation of HindSight will tag the object with an RFID, and upload the digital file to the database.

HindSight is effective as soon as the required object data is entered into the database; however, the experience is richer as the availability of stories increases. For HindSight to offer an experience with resonance, we recommend a minimum of 100 objects and stories to begin.

HindSight's purpose is to preserve the stories that correspond with the piece. When the data is collected, other information can also be added, such as provenance and artist; however this is optional.

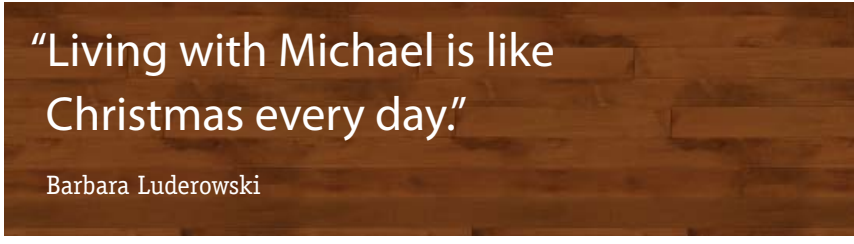
HindSight has the ability to broaden the experience as more object data is added. If more information about a particular object is discovered later, it can be added to the database and will be available in the third story source as prompted by VRD.

There are other affordances for the database and RFID tagging. In addition to the augmented reality experience on the sixth floor, the data eventually can be used for inventory or search for a particular item. The RFID tags will identify exactly where a certain object is within the space. This can prevent an item from being lost or stolen.

Conclusions

Each team member left the sixth floor of the Mattress Factory learning something new and different. We believe that Michael and Barbara's passionate stories enhanced our experience. Not only did the stories add depth to the objects in the collection, but revealed more about the owners behind the collection.

Our goal for the project is to preserve those stories. Using new technologies, HindSight stores and shares those stories for the future. The glasses still enable a viewer to see the aesthetic of the real collection as we did. Through virtual reality, it augments the view with Barbara and Michael's stories, just as we had experienced too. HindSight will offer another unique museum experience appropriate to the creativity of the Mattress Factory. It is a tool for visitors to create their own path and discover a new connection to art.



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